

REMARKS/ARGUMENTS

Claims 1-13 are pending. Claims 1, 7, and 13 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,420,165 to Weinstein. Claims 1-4, 7-10, and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,723,242 to Ohkata et al. in view of Weinstein. Claims 5, 6, 11, and 12 were rejected as unpatentable over Ohkata in view of Weinstein and further in view of U.S. Patent No. 5,563,066 to Buchanan.

Applicant appreciates the careful and thorough examination as reflected in the Office Action. For the reasons set forth below, it is submitted that the rejections have overlooked an important distinction between the claimed invention and the teachings of the cited references.

Claim 1 is directed to "A system for cleaning a contaminated matter comprising dioxins by decomposing the dioxins in the contaminated matter, wherein the system comprises a reaction tank holding at least:

at least one of *crushed cells* and *fractions of the crushed cells* comprising a pellicle of *Bacillus midousuji* cultured in the presence of a chlorinated aromatic compound which has a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring;
the contaminated matter; and
an aqueous medium."

Claim 7 is similarly directed to "A method of cleaning a contaminated matter comprising dioxins by decomposing the dioxins in the contaminated matter, wherein the method comprises:

mixing at least one of *crushed cells* and *fractions of the crushed cells* comprising a pellicle of *Bacillus midousuji* cultured in the presence of a chlorinated aromatic compound which has a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring, the contaminated matter, and an aqueous medium."

Claim 13 is directed to “A preparation for decomposing dioxins, comprising *at least one of crushed cells and fractions of the crushed cells* which comprise a pellicle of *Bacillus midousuji* cultured in the presence of a chlorinated aromatic compound having a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring.”

Thus, it is apparent that the claimed system, method, and preparation employ *crushed cells and fractions thereof* comprising a pellicle of *Bacillus midousuji* that has been cultured in the presence of a chlorinated aromatic compound having a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring.

As described in the present specification, the crushed cells/fractions of *Bacillus midousuji* break an ether bond peculiar to dioxins, and thus the constitution allows decomposition of dioxins through a reaction between the crushed cells/fractions and the contaminated matter in the reaction tank, regardless of the number of chlorine atoms in the dioxins (see the specification at page 43, lines 8-18). Additionally, the decontamination system, method, and preparation as claimed is hardly affected by temperature or salt concentration, unlike cleaning methods (such as Weinstein's) that employ live microorganisms. For example, the crushed cells/fractions are able to decompose dioxins at temperatures lower than the temperatures allowing activity of *Bacillus midousuji*, and even in a high-salt environment (p. 43, lines 19-27). Additional advantages of the present system and method are enumerated at page 44 line 4 through page 46 line 2.

One particularly noteworthy advantage of the present invention is that the crushed cells/fractions need not be collected after use in order to prevent undesired effects on the environment. In contrast, the use of live bacteria such as in Weinstein could potentially affect the environment if the organisms were not collected after the decontamination process.

The claimed invention is not remotely suggested by the cited references. Column 2 line 66 through column 3 line 25 of Weinstein merely describes two cultures of *Bacillus midousuji*

(designated SH2A and SH2B) that were deposited with the American Type Culture Collection (ATCC). Column 8, at lines 23-67, indicates that these strains of *Bacillus midousuji* are good extracellular secretors of proteins and thus may be good producers of industrial enzymes (while still alive, of course).

Column 17, lines 66-67 of Weinstein relate to an experiment in which live *Bacillus midousuji* of the SH2B strain was used to degrade a non-chloride dioxin, specifically non-chloride dibenzofuran.

Nothing in Weinstein or the other references suggests a system having a reaction tank holding at least “*crushed cells and fractions of the crushed cells* comprising a pellicle of *Bacillus midousuji* cultured in the presence of a chlorinated aromatic compound . . .” as claimed. Weinstein’s experiment employed live *Bacillus midousuji* organisms. Nothing in Weinstein or the other cited references would have suggested that crushed *Bacillus midousuji* cells and fractions thereof would be effective for decomposing dioxins. Accordingly, it is respectfully submitted that Weinstein fails to anticipate any of the present claims.

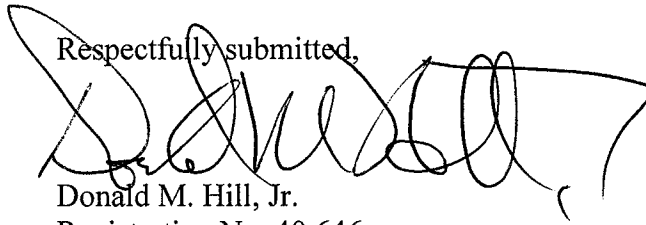
With regard to the rejections under 35 U.S.C. 103(a), as noted, Weinstein fails to disclose a system and method employing crushed cells/fractions of *Bacillus midousuji* as claimed. The other cited references likewise fail to disclose or suggest the claimed system and method. The Office Action acknowledged that Ohkata fails to disclose using *Bacillus midousuji* to degrade dioxins. As for Buchanan, it likewise fails to disclose or suggest the use of crushed cells/fractions of *Bacillus midousuji* as claimed.

Accordingly, all pending claims are patentable over the cited references.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required

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therefor (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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